

Remarks

Reconsideration of this application as amended is respectfully requested.

Claims 1-6 and 8-13 stand rejected under 35 U.S.C. §103(a) as being unpatentable over and U.S. Patent no. 5,668,648 of *Saito et al.* ("*Saito*").

Claims 1-6 and 8-13 have been canceled. New claims 15-25 have been added

Applicants respectfully submit that new claim 15 is not obvious in view of *Saito*. New claim 15 is a method for generating a hologram that includes the limitations

determining a holographic interference pattern in response to a description of an object;

partitioning the holographic interference pattern into a set of partitions;

determining a representation of the interference pattern for each partition;

printing the holographic interference pattern onto a transparent print medium in response to the representations;

directing a light beam onto the transparent print medium such that the holographic interference pattern in the transparent print medium modifies the light beam to provide a person viewing the transparent print medium with a three-dimensional image of the object.

(New claim 15) (emphasis added).

Saito does not disclose or suggest partitioning a holographic interference pattern for an object into a set of partitions and determining a representation of the interference pattern for each partition as claimed in new claim 15. Instead, *Saito* discloses determining an interference pattern for an entire object to be represented in a hologram. (*Saito*, col. 2, lines 35-40). For example, *Saito* states that

The interference computation type computer-generated holography is conceptually similar to a conventional optical hologram forming scheme in that a reference light emitted from a laser source is superposed on the diffraction image of an object of interest to derive an interference pattern therebetween.

(*Saito*, col. 2, lines 35-40).

In addition, *Saito* does not disclose or suggest printing a holographic interference pattern for each partition onto a

transparent print medium that provides a person viewing the print medium with a three-dimensional image of an object as claimed in new claim 15. Instead, *Saito* discloses recording an interference pattern for the entire object of interest on a photographic plate. (*Saito*, col. 2, lines 40-43). It is submitted that the photo-chemical process of recording a pattern onto a photographic plate does not suggest printing a partitioned interference pattern onto a transparent print medium as claimed in new claim 15.

The Examiner has stated that printing a computed hologram interference pattern on a printable medium was well know and has cited U.S. Patent no. 5,194,971 of *Haines* ("*Haines*") and U.S. Patent no. 6,366,368 of *Horimai* ("*Horimai*") in support of that assertion. Applicants respectfully submit that neither *Haines* or *Horimai* teach printing an interference pattern on a print medium that provides a person viewing the print medium with a three-dimensional image of an object as claimed in new claim 15.

The Abstract of *Haines* states that an interference pattern is printed to form a hologram element. (*Haines*, Abstract, last three lines). However, a closer reading reveals that *Haines* does not teach printing an interference pattern on a transparent medium that provides a person viewing the print medium with a three-dimensional image of an object as claimed in new claim 15. *Haines* teaches making hard copies of computer generated pixel maps (*Haines*, col. 8, lines 13-15) that are not used to directly view a 3D image of an object as claimed in new claim 15 but are instead used to create a hologram on a recording plate by displaying a pixel map on a cathode ray tube (*Haines*, col. 8, lines 15-17) and photographing a series of the displayed pixel maps (*Haines*, col. 8, lines 22-23) and then using a reel of the photographed pixel maps to record a holographic image on a holographic recording plate (*Haines*, col. 8, lines 43-55). In contrast, the printed interference pattern in the print media of new claim 15 provides a 3D view

of an object without resorting to the steps disclosed by *Haines* of playing back photographed pixel maps in to a holographic recording plate.

Horimai does not teach printing an interference pattern on a transparent medium that provides a person viewing the print medium with a three-dimensional image of an object as claimed in new claim 15. Instead, *Horimai* teach printing an interference pattern and then photographing the printed interference pattern to reduce its size to adjust for wavelengths of light and then printing the reduced pattern in the form of irregularities and dots. (*Horimai*, col. 2, lines 7-13). In contrast, the printed interference pattern in the print media of new claim 15 provides a 3D view of an object using the printed interference pattern itself without reduction and wavelength adjustments and reprinting.

It is therefore respectfully submitted that the method of new claim 15 that includes the steps of partitioning a holographic interference pattern for an object into a set of partitions and determining a representation of an interference pattern for each partition and printing a holographic interference pattern for each partition onto a transparent print medium that provides a person viewing the print medium with a three-dimensional image of the object is not obvious in view of the references cited by the Examiner.

Given that new claims 16-18 depend from new claim 18, it is submitted that new claims 16-18 are not obvious in view of the references cited by the Examiner.

It is also submitted that new claim 19 is not obvious in view of the references cited by the Examiner. New claim 19 is an apparatus for generating a hologram that includes limitations similar to the limitations of new claim 15. Therefore, the remarks stated above with respect to new claim 15 also apply to new claim 19.

Given that new claims 20-22 depend from new claim 15, it is submitted that that new claims 20-22 are not obvious in

view of the references cited by the Examiner.

Finally, applicants submit that new claim 23 is not obvious in view of the references cited by the Examiner. New claim 23 includes a printer that stores a set of basis interference patterns and a computer that determines a set of weights in response to a holographic interference pattern and that transfers the weights to the printer such that the printer prints the holographic interference pattern onto a transparent print medium using the basis interference patterns in response to the weights. None of the references cited by the Examiner disclose or suggest a printer that stores a set of basis interference patterns and that prints a holographic interference pattern using the basis interference pattern and a set of weights obtained from a computer as claimed in new claim 23.

Given that new claims 24-25 depend from new claim 23, it is submitted that that new claims 24-25 are not obvious in view of the references cited by the Examiner.

It is respectfully submitted that in view of the amendments and arguments set forth above, the applicable objections and rejections have been overcome.

The Commissioner is authorized to charge any underpayment or credit any overpayment to Deposit Account No. 08-2025 for any matter in connection with this response, including any fee for extension of time, which may be required.

Respectfully submitted,

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